Software Rights Archive, LLC v. Google Inc. et al Doc. 271

EXHIBIT 1

Dockets.Justia.com

REC'D SEP 26 2008

UNITED STATES DISTRICT COURT FOR THE

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

---oOo---

COPY

THE APPLE iPOD iTUNES ANTI-TRUST LITIGATION, No. C-050037-JW(RS)

_________________________________/

DEPOSITION OF ROGER G. NOLL, Ph.D.

Taken before EARLY K. LANGLEY, RPR, RMR

CSR No. 3537

September 19, 2008

Aiken Welch COURT REPORTERS

One Kaiser Plaza, Suite 505
Oakland, California 94612
Ph 510-451-1580
Fax 510-451-3797
www.aikenwelch.com

I N D E X

	PAGE
EXAMINATION BY MR. MITTELSTAEDT	6

E X H I B I T S

DEFENDANTS'	PAGE

(No Exhibits Marked.)

DEPOSITION OF ROGER G. NOLL, Ph.D.

BE IT REMEMBERED, that pursuant to Notice, and on the 19th day of September 2008, commencing at the hour of 10:10 a.m., in the offices of Jones Day, 555 California 26th Floor, San Francisco, California, before me, EARLY K. LANGLEY, a Certified Shorthand Reporter, personally appeared ROGER G. NOLL, Ph.D., produced as a witness in said action, and being by me first duly sworn, was thereupon examined as a witness in said cause.

---o0o---

BONNY E. SWEENEY, PAULA ROACH, Coughlin Stoia Geller Rudman & Robbins LLP, 655 West Broadway, Suite 1900, San Diego, California 92101, appeared on behalf of the Purchasers Plaintiffs.

HELEN I. ZELDES, Zeldes & Haeggquist, LLP, 655 West Broadway, Suite 1410, San Diego, California 92101, appeared on behalf of the Indirect Purchaser Plaintiffs.

ROBERT A. MITTELSTAEDT, MICHAEL SCOTT, Jones Day, 555 California Street, 26th Floor, San Francisco, California, 94104, appeared on behalf of the Defendant Apple, Inc.

ALSO PRESENT: Carlyn Clause.

Nick Silva, Videographer, Aiken & Welch Court Reporters and Video, One Kaiser Plaza, Fifth Floor, Oakland, California 94612.

differential ease of access to the iTunes Music Store for these competing MP3 players; correct?

A. Well, that's one feature. But another feature would have been suppose that Apple had licensed FairPlay to SanDisk which is a really high quality product. All right. If you read ratings of portable digital media players, SanDisk is very high. 11:28

The additional benefit would have been the people who buy SanDisk would have a qualitatively superior experience to the already good experience they have with SanDisk. 11:28

Q. The way you're going to determine or try to determine whether there is any impact of what you call a tie on the price of iPods as opposed to the impact from substantial market power that you think Apple might have in the but-for world anyway, is to run some regression analyses; is that correct? 11:29

A. Well, maybe, maybe not. I can't tell you what analysis I'm going to do to get at anticompetitive impact as opposed to damages until I know what data are available. 11:29

It would be completely foolish to say here are the regressions I'm going to run independent 11:29

of what data are available.
So, I mean, in principle, yes, one does that, although I would say half the time that's not how anticompetitive impact is proved by an economist, because the data aren't of the form that would support a reliable econometric analysis. 11:29

Q. One possible method of regression approach would be a before and after; right?

A. That's -- well, that's, again, damages as opposed to impact. I thought we were talking about impact. 11:30

Q. Okay. To do damages --

A. Yes.

Q. -- the same thing is true, that you would use a regression analysis to measure the impact on price from the alleged tie as opposed to impact on price from the substantial market power that Apple might have in the but-for world? 11:30

A. Certainly that is a very likely possibility. I mean, there, again, it depends on what happens when you find the data. 11:30

There -- it isn't always necessary to use a regression analysis to do a before-after study. If you have either a homogeneous product or very 11:30

little variation, there's only two or three product models, sometimes a simple little table will do it.

So, but in principle, it is normally the case that damages are estimated using a regression model. And I suspect that will happen here, but I don't know that until I see the data. 11:31

Q. Okay. Have you concluded that you can use a before-after method of determining whether there's damages and, if so, the amount without a regression analysis in this case? 11:31

A. No.

Q. Okay.

A. I mean, what I described in the before or after analysis is a method of estimating the damages that is -- can have an implementation of many forms. All right. 11:31

And it is -- it is normally the case that the implementation method is a price regression that attempts to take into account variation in price due to all of the factors that are likely to affect supply and demand and then see if there's anything left over that can be explained by the anticompetitive act. 11:31

Q. All right. Have you done enough work in 11:32

this case to determine if the before-after method can actually be implemented in this case?

A. I believe that it can, and -- but I'm basing that primarily on my experience with, you know, based on previous cases that this market seems less complicated to me than others that have been successfully done, and there are objective criteria out there that one can look at to estimate the demand for iPods and the price of iPods through time based on product characteristics and product reviews and things like that. 11:32 11:32

So it's my belief that this will work. Of course, you can't -- you don't know whether the number is going to come out there is a statistically significant positive damage until you run the regression. 11:32

So, but I -- the method is certainly valid and it is one that an economist who is given the task of estimating damages should pursue. 11:33

Q. Okay. But do you know whether, in fact, it can be implemented here in this case?

A. I'm sure it can be implemented in the sense of running the regression. I'm not sure that the answer is going to be a positive 11:33

advantage. I don't know.

Q. Okay. Are you sure that the yardstick method can be implemented in this case?

A. As I have said in my report, that is the one I'm least happy about, all right, in that it 11:33 requires identifying the appropriate comparative products. And my -- I believe that's -- that's the hangup, is identifying the appropriate benchmark products.

But, you know, as I've said in the report, 11:34 there are some candidates out there. If the plaintiffs had completed the market correctly, then the most obvious candidates are the products that are the closest functionally to portable digital media players, but that are not in the 11:34 same market.

Q. Okay.

A. And I also gave an explanation of why it's possible, although you normally don't do it, you might even be able to use products in the same 11:34 market because of the effect that tying has in segmenting the market, so that even though in the absence of anticompetitive acts, all the products would be in the same market, the anticompetitive act may have reduced competition among portable 11:34

digital media players sufficiently such that you can actually use the -- some of the competitors in the portable digital media player market as a yardstick. So that's possible, but, again, it requires data that I'm not sure exists. 11:35

So, I would say that's a candidate, someone should pursue it, if they were going to estimate damages, but I have more doubts that that one will work than the other two.

Q. Have you done enough work to determine if 11:35
the markup method can, in fact, be implemented in this case?

A. Well, actually, I'm not the one who did the work. I cited a paper that I found that was fairly recently written that -- that essentially 11:35
does this.

Now, it doesn't have internal data, unfortunately. It has -- what they did is they tried to build up the cost.

Q. Okay. Can you just answer the question? 11:35
And the question is: Have you done enough work -- have you seen enough work to determine if the markup method can, in fact, be implemented?

A. Yes.

MS. SWEENEY: Object. He was answering 11:35

your question. You interrupted him and I would just ask that you allow him to complete his answer.

MR. MITTELSTAEDT: He understood. He was going beyond the question.

THE WITNESS: No, I wasn't. I was --

MR. MITTELSTAEDT: Sir --

THE WITNESS: You changed the nature of the question on me. I was answering did you do the work. I said I didn't do the work, but I saw it done by others and here's how they did it.

MR. MITTELSTAEDT: Okay.

THE WITNESS: Now, you changed the question. When you changed the question I can answer it "yes" or "no." But the question as you originally asked it I couldn't answer "yes" or "no" --

MR. MITTELSTAEDT: Okay.

THE WITNESS: -- and be honest.

BY MR. MITTELSTAEDT:

Q. Sir, you were starting to tell me everything that was in your report on that subject and in the interests of time --

MS. SWEENEY: Objection. Mischaracterization.

BY MR. MITTELSTAEDT:

Q. -- we don't need -- we don't need to do that.

But here's the question now: Have you done enough work or have you seen enough work to be able to tell us whether, in fact, the markup method can be implemented in this case? 11:36

A. I know the markup method can be done in this case, yes.

Q. Have you actually done it? 11:36

A. Of course I haven't done it yet, because the way I would do it is conditioned upon data that I don't have yet.

Q. All right. And are you going to run the regression analyses yourself in this case? 11:36

A. I have no idea. I don't know what I am going to be doing beyond class certification.

Q. Have you talked with anybody about regression analyses for this case?

A. No, I've had conversations with the attorneys about what my report means, but I haven't discussed regression analysis with anybody who, in the sense of how one would actually go about doing it, no. This is all from me. 11:37

Q. Do you consider yourself an expert 11:37

Q. And what happened in --
A. And there's also the introduction of video. I should add that as well, which I don't remember the exact date. I think it was early 2000 -- mid-2006, but I don't have the exact date in mind for that. 11:41
Q. What happened in October 2003?
A. The iTunes Music Store became accessible to people who had Windows-based PCs instead of people who just had Mac-based PCs. 11:41
Q. In any event, you would be comparing prices of the iPod before and after April 2003 and at various times from April 2003 to present; right?
A. Well, yeah. The essence of the problem is 11:42 to explain variants in price through time with as many things as possible and then see if these other things affected it.
Q. And you would use a regression analysis that would measure all of the factors that affect 11:42 price?
A. Well, that -- the way you approach it -- that's sort of the wrong way to put it. That's starting with the answer and then going to the question. 11:42

You start off with the things you think are plausible candidates to explain price. Almost certainly some of them won't.

So, you know, it's certainly the case that everything that is a plausible candidate to explain variation in price based on economic theoretic reasoning would be included. 11:42

Q. But you want to end up with a regression equation that measures all of the factors that, in fact, affect the price; right? 11:42

A. That is correct.

Q. And if you leave out a factor, your regression will erroneously attribute the impact of that factor to the anticompetitive conduct at issue -- 11:43

A. No. No.

Q. -- right?

A. That's only true if the factor you've let out -- left out is positively correlated to the event. Specification error doesn't necessarily 11:43 reduce the consistency of a particular coefficient. Whether it does depends --

THE REPORTER: I'm sorry. Repeat it again.

THE WITNESS: It doesn't -- read back what you've got.

(Record Read.)

MR. MITTELSTAEDT: Let's just start again.

THE WITNESS: Yeah.

BY MR. MITTELSTAEDT:

Q. Okay. The question is if you leave out a factor, your regression analysis will erroneously attribute the impact of that factor to the anticompetitive conduct at issue.

A. Right. And that is only true if the excluded variable is positively correlated with the event in question or the variable whose coefficient you're attempting to estimate. If it's negatively correlated, then, in fact, you'd end up with an underestimate of the impact of the event. 11:43 11:44

Q. Okay. Have you made any analysis of what the relevant factors are that should be included in this regression analysis on the before-after model? 11:44

A. The standard approach to do this is the hedonic equation, based upon --

Q. Hedonic, could you spell that?

A. H-e-d-o-n-i-c.

Based on the qualitative attributes of the 11:44

product, and the prices of other products, and other factors that would increase demand, such as the penetration of personal computers in households and things like that.

Q. Okay. But, have you taken it beyond that and actually tried to identify the factors that needed to be included in this case for before-after regression? 11:45

A. I don't -- I don't know why my previous answer wasn't an answer to that question. So explain to me what I didn't say that you want to hear. 11:45

Q. You weren't specific enough.

What factors do you think affect the price of iPods? 11:45

A. I believe -- the price of iPods is, again, straightforward application of partial equilibrium market theory in economics which is their cost factors. And there are factors that affect price through cost, and there are factors that affect price through demand. And, so, there's a standard litany of what the factors are that affect cost and what the -- the factors that affect cost are component costs and the various other input costs. And the factors that affect demand are things like 11:45 11:46

income, the penetration of complementary products like personal computers and then there's market level phenomenon such as the price of alternatives.

Q. All right. Anything else that you would list as factors that you would need to include, or at least test in your regression analysis? 11:46

A. No. That's it. I mean, it's -- it's the standard approach to supply and demand analysis where you look at the way costs and the way demand affects price. 11:46

Q. Okay. Do you also look at the reason that people buy iPods?

A. Well, the reason that people buy iPods is background information to what the demand curve looks like. So you don't go out and measure people's moods and things like that. You measure the qualitative attributes of the product and the conditions in the market as a way to capture what their demand is. What their reasons are in some sort of psychological sense is irrelevant. 11:46 11:47

Q. Okay. What are the qualitative factors or the attributes that you would look at?

A. The, first of all, the functional features of a product, what -- 11:47

Q. Let's talk about the iPod in particular.

A. Well, you have to -- it has to have more than iPods. But, yes, you would look at what are the characteristics, what are the functional characteristics this can perform. 11:47

You would also like to get at some measure of quality, and this can be done through things such as product ratings in trade magazines, CNet; things like that. It can be consumer survey studies about their personal experiences and what 11:48 they...

It is very common and I suspect Apple may have already done this for companies to survey their customers about what they like and what they don't like about a product. And that kind of 11:48 information sometimes, although not always, is useful in explaining demand.

Q. Would you also look at advertising costs expenditures?

A. In principle, one might. Yes. In 11:48 principle.

Q. Why?

A. Because advertising might have a positive effect on demand, If there were change in it. I mean, the reason I was a bit hesitant is that in 11:48

the time frame that we're talking about which is a few, couple of years, there usually isn't much change, and if things -- if a variable isn't changing, then it's not going to explain changes in price. 11:48

But, yes, in principle, it's possible that if there were a big change, a significant change, a substantial change in advertising expenditures during the period, it could have the effect on demand. That's a very hard thing to model, by the 11:49 way, because the right way to think about advertising is not a flow but a stock. You're sort of like a capital investment.

Q. Not a flow but a?

A. A stock. You're creating a capital 11:49 investment in consumer awareness. So advertising expenditures in one year can have an effect on demand for several years. So it's in a very short time period of a few years. It's usually pretty hard to find a significant effect of advertising. 11:49

Q. Have you heard the term "coolness factor"?

A. Only, yes, of course. I've heard -- I've heard of it, yes.

Q. Okay.

A. And then my -- one of my grandchildren 11:49

just used it when I had dinner with them on Wednesday night.

Q. In reference to?

A. Oh, nothing to do with any of this. It had -- what were they referring to? 11:50

Q. Do you think the coolness factor affects demand for iPod?

A. I don't know even how to answer the question. I think in the sense that I need to back up. I'd have to know what you meant by it. 11:50 I mean, people have attachments to products, and a large part of what marketing is about is trying to build those attachments. Those -- those affect demand. But I'm having a hard time knowing how we would go out and measure units of cool -- 11:50

Q. Well, that was going to be my next question --

A. -- for a regression analysis.

Q. But the first question is: Do you think that type of attachment to a product is something 11:50 that affects demand?

A. Well, it affects demand but it affects it -- you can -- that's what determines elasticity of demand. All right. So you're out there estimating elasticity of demand and what's going 11:51

into that elasticity of demand is -- includes product attachment. So, specific elasticity of demand is, in fact, affected by affective aspects of a product that had nothing to do with its functionality. 11:51

Q. Like what? In the case of an iPod, what would be an example?

A. I don't know that there are any examples. I don't know that you are going to use that as an explanation for why they're so popular, and I look 11:51 forward with great expectation to your economic expert measuring coolness in his econometric models, because I don't have any way that I know of to measure it directly. All I would do is infer it indirectly from the results. 11:51

Q. What does that mean?

A. What it means is -- let's rewind the tape.

What was -- how does coolness as an attribute of an Apple product vary over time? What are the things that cause to it vary? 11:52 Because if the issue is, as is certainly the case, that some small single-digit fraction of people in this country are attached to Apple and they would pay huge amounts for anything Apple-like, you know, they're the people who were still buying 11:52

Macs at the pit of their -- when they were -- had the lowest market share they ever had, which I think bottomed out at 3 or 4 percent, something like that. They were nonetheless people who hung in there. They loved everything about a Mac. 11:52
They swore by it. So there is some number of people out there who have it.

Now, the issue is how is that changing over time. And what -- what factors affect it. And if they're not measurable by product 11:52
attributes, such as one thing that people like about, you know, Steve Jobs has a thing about size. All right. He starts off with a design criterion for both iPods and iPhones that has the dimensionality of it as an immutable constant. 11:53
And, so, small, you know, okay, well, we can get at maybe that affects coolness, the fact that it's so thin. All right. And, so, we can measure thinness and put that as an explainer in the demand equation. 11:53

What else is it? Maybe every time people see Jobs at his winter Apple conference come out on the stage and do his little routine, boy, they think that's cool.

And, so, if that's true, then, there ought 11:53

to be an immediate effect of a Steve Jobs talk on sales of Apple products for the next couple of months.

So, all I can think of as an economist is objective ways to try to capture that in a demand equation that have to do with things I can actually touch, feel, see, measure. 11:54

I don't know of any way to -- to my knowledge, there is no scientifically valid method of measuring units of cool. 11:54

Q. What are the reasons you think people buy iPods?

A. I think probably because they think it's a good product, and it satisfies their needs, their -- what they want. 11:54

Its price is lower than their willingness to pay given the alternatives and given the functional uses that they want to put it to.

Q. And what are their -- what are the various ways people use iPods? 11:54

A. Well, they use iPods to listen to audio and video files. I don't know what else --

Q. What's the source of --

A. I should also say if the -- if the iPod is embedded in an iPhone, then it's all the other 11:55

THE WITNESS: Okay.

MR. MITTELSTAEDT: Let's take a short break now.

MS. SWEENEY: Okay.

THE VIDEOGRAPHER: This ends tape No. 1 of the deposition Roger Noll. The date is September 19th, 2008, and the time is 12:01. 12:01

We are now off the record.

(Break taken.)

THE VIDEOGRAPHER: Test 1, 1, 2. 12:15

Stand by. On the record. This begins tape No. 2 of the deposition of Roger Noll. The date is September 19th, 2008, and the time is 12:16. We're back on the record.

BY MR. MITTELSTAEDT: 12:16

Q. For the before-after model, can you be any more specific as to what variables you're going to include in the regression analysis than to say as you do in the report, "product features, input cost and the stage of the product in its life 12:16 cycle"?

A. Do you want specific examples of product features and input costs?

Q. I want whatever you are going to put in your regression analysis as a variable. 12:16

A. I don't know what I am going to put in my final regression analysis as a variable because I haven't collected the data to see what's significant and what isn't.

I can -- the -- the -- I think what you really want to know is what things might be tried as opposed to what's going to be in the final model because I have no idea what would be in the final model. 12:16

Q. What variables are you going to put in your various versions of your regression analysis for the before-after model? 12:17

A. Again, the -- I start off with the answer I've given several times.

They would be specific functions the product can perform, would be the first category, such as what specifically can you do with it, because that's changed over time. All right. 12:17

An iPod today isn't the same thing an iPod was in 19 -- or 2001. And as time has progressed, it's had greater and greater functionality, and, you know, like the introduction of Internet access, the adding of video, increases in memory size. 12:17

So, it's -- it's -- it's the -- it's 12:17

essentially the technical specs of an iPod that a consumer considers when making a decision. All right. And, so, that would be the list of things. All right.

The technical characteristics. And you 12:18 can go to Apple's website and it will tell you the technical characteristics from the point of view of functional use that each model of iPod has. All right.

As I said earlier, it strikes me that 12:18 something that would be put in there would be dimensionality. All right. That is to say, the size of the iPod because, again, each one has a slightly different size and shape.

And, so, you'd want to -- I know that 12:18 Apple thinks that's important. I don't know that it as a practical matter is important, but certainly that is one thing that might explain price.

On the cost side, the -- it's not clear to 12:19 me that one needs to decompose the cost into components, but, in principle, one might. It depends on whether simply knowing what the average variable cost of iPods would be. If you put that in, that may be sufficient. But it may not be. 12:19

It may be that you have to break it into components, such as how much did they spend on memory and how much did they spend on microprocessor, et cetera.

So, again, for completeness, you probably try to do some of that, but as a practical matter, it's usually the case that once you've got the manufacturing -- average variable cost in manufacturing, you've got enough. So, I don't know what the final result is going to look like, but that's how you would approach it. 12:19 12:20

Then I also said there would be characterizations of the market; right?

The features available on other products, their prices. The -- one of the issues in the history of iPods has been the fact that you couldn't get radio on them and you could get radio on some of the alternatives. 12:20

So that would be to see if that mattered in terms of the demand for iPods, the fact that others had radio and they didn't. 12:20

So, and then what's going on in the economy. Since this is not exactly in the same category as meat and potatoes in people's budgets. So you can imagine rise and falls in sales in 12:20

prices arising from what the overall state of the economy is.

You know, the penetration of computers because an essential input, an essential complementary product is computers. 12:21

Q. Are you done?

A. I think so. But I'm, you know, I'm sitting here trying to think of things in response to your question.

Q. Under your first category, the technical 12:21 functionality, are you talking about whether it can play music, whether it can play video; that type of thing?

A. Well, in part, yes. But also in part where it can get it from. All right. Because the 12:21 direct access to the Internet, for example, is a relatively new feature a couple of years ago. All right.

So, whether -- you know, that is a feature that may or may not have affected both demand and 12:21 price for iPods.

And then, of course, the other thing to bear in mind, of course, is at any given time there's, you know, three or four or five different types of iPods that Apple is selling that differ 12:22

all the way from the very simplest audio only, whatever the current lowest-end iPod is that's really only good for music and that doesn't have Internet access to the iPhone which is the highest end which is basically a pumped-up computer. 12:22

Q. Do you think the introduction of Apple's Music Store could have had a positive effect on the iPod price even if it had been designed in such a way that there was no differential ease of access? 12:22

A. I think the -- as you put the question, that's not the way I would think about it, so I can't answer it "yes" or "no."

Q. How would you think about it?

A. I think the availability of digital 12:23 downloads for permanent storage is a factor affecting the demand for portable digital audio players, and it's not a dichotomous variable like iTMS came into existence. Instead, it's a continuous variable which is how much product is 12:23 available and who is it available from, because there was extensive permanent download of music files prior to the introduction of iTMS. It's just the feature that had made iTMS different was the fact that it had a much larger library of 12:23

recordings from the major distribution companies than any of its predecessors.

Q. Okay.

A. That was its main -- the main thing that happened in 2003 is that -- this doesn't have much 12:24 to do with Apple. It's that between losing the permanent injunction against Napster in February of 2002 and the introduction of Apple, and then subsequently having to spin-off MusicNet and PressPlay because they were being attacked on 12:24 antitrust grounds.

Hollywood changed its mind about the role of digital downloads in the music industry. Sometime between the spring of 2002 and the fall of 2002, it changed its mind and was -- and it 12:24 happened in a different sequence like BMG had already decided that it was going to do this and that's why it bought a piece of Napster and was in the process of converting Napster to a legal site when the cases took place in 2001 and 2002. 12:25

So BMG was the first, and then there were others that were much later, and what had to happen for this whole source of music to evolve as an alternative to buying CDs, was that the distribution companies had to change their mind 12:25

their burden. And I don't have an opinion as to whether they can prove it.

I know how they would prove it, but I don't know what the answer is.

Q. Okay. How would they prove it? 12:36

A. They'd prove it by precisely what we've been talking about all day, which is you see if there was an affect on the demand for iPods in particular that can be explained only by the exclusivity arrangement. 12:37

Q. Okay. And that depends -- the success of that approach depends on you being able to identify everything that affected the price of an iPod over time; correct?

A. That's -- that's wrong. I mean, it 12:37 depends on not excluding factors that explain price and quantity of iPods that plausibly are correlated with the exclusivity. That's the crucial --

Q. So you need to identify all the factors 12:37 that are plausibly correlated with price and quantity of iPods sold?

A. All that -- beyond plausibly that actually would have a statistically significant correlation. 12:37

Q. That's what you need to do?

A. With -- yes. With -- no. They have to have a significant -- statistically significant correlation with the period of the exclusivity and the fact of the exclusivity. It's not that to 12:37 have a correlation with price. It's that they -- in order for the specification error of leaving those variables out to produce an inconsistent or biased estimate of the effect of the exclusivity, it has to be the case that the exclusivity period 12:38 is correlated with this alternative source.

For example, it may be the case --

Q. Slow down just -- just a second for the court reporter.

A. Sure. It may be that the phases of the 12:38 moon affected the demand for iPods, but the phases of the moon are not correlated with the presence or absence of the exclusivity of FairPlay. All right. And, so, if you exclude them you may do a worse job of explaining the demand for iPods, but 12:38 you would not produce a biased inconsistent estimate of the coefficient on exclusivity.

Q. Is the stage of the iPod in its life cycle a variable that you need to consider?

A. That's what I put in my report. And, 12:38

yeah, there's learning by doing in manufacturing these things that affect cost.

Q. And how do you measure that variable?

A. There's two ways to measure it. One is the cumulative quantity sold of that particular model and the other is the period since its introduction, the amount of time since its introduction. 12:39

Q. Is demand for iPod likely affected by the availability of downloads on Amazon.com? 12:39

A. "Likely" is the wrong word. I would use "plausibly." It is the case that the availability of downloads from other sources, not just Amazon, is a factor that affects the demand for iPods.

Q. Before we go to lunch, let's finish up on the game theory method. 12:39

Would you walk us through and explain the steps.

A. The basic -- the basic idea, the really simple idea and let's start off with what the simple idea is. 12:40

Q. Good.

A. The simple idea is that you have a characterization of the market structure in the world as it exists. And another characterization 12:40

entry, and a new iPod version was introduced that had some functional improvement.

Part of your task will be to try and determine the impact on the demand for the iPod from each of those three things; right? 14:08

A. What was the third?

Q. The new iPod.

A. Well, the new iPod, I understand, and the launch of iTMS, I understand. What's the third?

Q. Two aspects of iTMS. One is just the existence of a new supply for music for an iPod and the other is the differential ease of entry aspect that we talked about this morning. 14:08

A. Right.

Q. So of those three aspects of what happened in this hypothetical in April of 2003, one of your tasks will be to separate the impact on the demand for the iPod of those three factors. 14:09

A. That's correct.

Q. And how are you going to do that? 14:09

A. Well, the -- let's go back a step as to why this is a problem. All right.

So, the econometric problem here is to separate out the fact, assuming that everything is as stated in the hypothetical. So three things 14:09

happened simultaneously. How does one separate the effects, and the only plausible way that I know to do that is to look at subsequent events that may have affected some but not all of the demand, and try to estimate what they did to demand and use that as a mechanism for representing -- for estimating the effects of just the availability in general of digital downloads. 14:09

With regard to the new model of the iPod, I -- that doesn't strike me as the hard problem because that's -- that's fairly easy to do based on functionality. The harder problem is to separate out exclusivity from simply the existence of digital downloads. 14:10

So, but, having said that, there were other forms of digital downloads that existed. It's not a -- it didn't go from all -- from nothing to all. But as I said earlier, it went from relatively little being available to relatively lot. And, so, there would be -- one of the explanatory variables you would attempt to use would be some measure of the scope of availability of permanent downloads over the Internet, which it wasn't that it was zero before iTunes Music Store; it was just that it dramatically increased with 14:10 14:10 14:11

iTunes Music Store.

Q. Does the before-after method work when the price of the reference product, here iPods, is declining over time?

A. Yes, because there -- obviously the relevant factor is its profitability, its markup. And all electronic products have declining prices over time. Every Information Technology Case I've ever known about, the issue has been would it have fallen faster. 14:11 14:11

Q. The claim for damages in this case, as you understand it, is an alleged overcharge for iPods; is that right?

A. Yes.

Q. Who made that decision that that was going to be the claim for damages? 14:11

A. I don't know. How would I know that?

Q. Well, I mean, one possibility would be that you made it. So let me -- let's rule that out. 14:11

A. Which of my law degrees did I use to decide that?

Q. How did it come to pass that you have focused on performing or strike that.

How did you decide to address your report 14:12

case, then the total monopoly profits go up, if you can engage in tying.
Q. Okay. Have you made any analysis of the impact of the alleged tying arrangement on the price of music? The price of iTunes music? 14:24
A. I have done no analysis of the effects of the alleged tying. I don't have a merits conclusion. So I -- I haven't done it for the tied product or the tying product, though. This is not the liability phase. This is the class 14:24 certification phase.
Q. Is it --
A. I don't have a conclusion about what the effects on the price of anything were.
Q. Okay. Is it plausible that if the 14:24 plaintiffs were right that there was a tying arrangement, it would have caused the price of iTunes store music to drop?
A. Maybe, maybe not.
Q. Compared to the but-for world? 14:25
A. There's -- you can't -- you cannot -- there's no theoretic answer to that question. It's an empirical question. Maybe, maybe not. It depends.
Q. It depends on the results of a regression 14:25

analysis taken into account the factors that affect demand for iTunes music?

A. Well, I would have said that's an example of one way to answer the problem, yes. But it -- that's not -- the "it depends" part is it depends on the conditions in the market, the circumstances in the market. 14:25

Q. Okay.

A. Both technical circumstances of production and demand circumstances. 14:25

Q. Okay. Can you describe what circumstances in the market would lead to a lowering of the price of the -- of iTunes music as a result of the alleged tie?

A. The closer the two products are to having a fixed quantitative relationship in terms of the quantity purchased of each. 14:26

Q. Can you give me an example on the other side other than the converse of that?

A. Well, in the case of -- the reason -- it's sort of facetious because obviously this isn't that case. I mean, people typically have an iPod, and then they vary in the number of tunes they buy. All right. So, the -- in this -- it's obviously not a fixed relationship between the 14:26 14:26

complements.

The -- an example of something that is a fixed relationship would be you had to have a personal computer. Right. And one personal computer produces an iPod. Right. Something to 14:27 interact with an iPod. So that's closer. It isn't complete because someone might have two or three PCs, but that's closer to being. And then even closer still would be the memory in an iPod is in a fixed relationship to the iPod or the 14:27 microprocessor is in a fixed relationship to the iPod.

Q. Okay. Other than the fixed-relationship concept, what would be another circumstance in the market that would lead theoretically to the 14:27 conclusion that the price of the tying product, the music, would be lowered as a result of an actual tie?

A. Well, the -- the cost of the substitute for the tied -- the tying product and the tied 14:27 product.

I mean, had you asked me about at length there's an alternative to iTMS called going out and buying a CD and ripping it. And that's -- that puts a ceiling on whatever iTMS could ever 14:28

by or correlated with the decision to close the system as opposed to introduce iTMS.

Or put another way, would the iPod be less cool if, say, Apple hadn't done whatever it did to cause Harmony to stop existing. 17:11

Q. Going on to another question.

A. Okay.

Q. Are you thinking of having a number of dummy variables, for example, a dummy variable that indicates whether the screen is in color, the 17:12 storage size, the thinness, or are you thinking about having just one dummy variable?

A. To measure the product attributes of the iPod?

Q. Right. 17:12

A. I mean whether the -- no. I was thinking that the set of functional attributes of the iPod would be a list of variables and my expectation is some will work and some won't. Some of them will matter and some will not. 17:12

Q. And you're going to determine whether they matter or not in what fashion?

A. Well, the -- the -- let's start off with different models of iPod have different functionality and have different prices. All 17:12

right.

The differences among them and the changes in prices through time of various models of iPods should in part be determined by their attributes.

Like all electronics products, the functional performance of iPods improves over time, and it would be a mistake not to take it into account and attribute it all to anticompetitive harm. 17:13

So what you have to do is make certain that as technological progress in iPods takes place, the price effect either through its effect on costs or through its effect on behavior that allows for a higher markup, is separated from whatever the effect of the absence of competition with other portable digital media players for people who want to access iTMS. So it's that separation that requires the functional characteristics of the models at a given moment in time and through time be part of the explanation of prices. 17:13 17:13 17:13

Q. Is there -- is there an issue about whether you're -- strike that.

Do you have any idea of the number of different iPods during the class period? 17:14

A. Yeah. I mean I did, in fact, look at the -- both the Apple website to see what was currently being offered and then I went back through the press releases. I read about when they introduced various products, so I can't recite for you a number but I have in my mind, you know, I know that such information is easily accessible and that there are, you know, ten or so such models. 17:14

Q. Is there some issue about whether there are enough price changes or prices that a regression with all the important variables can be estimated? 17:14

A. Of course there is. There is -- that's why probably -- probably a minority of antitrust cases end up with regression analysis being used to prove things like market power or market definition, is the extreme difficulty of identification that one faces in a differentiated product industry. I mean that's absolutely right. It's less likely to be a problem in the damages side. 17:15 17:15

So frequently -- I mean the common mode is the liability expert really doesn't do much in the way of regression analysis because it's too 17:15

STATE OF CALIFORNIA)
) ss.
COUNTY OF ALAMEDA)

I, EARLY LANGLEY, a Shorthand Reporter, State of California, do hereby certify:

That ROGER G. NOLL, in the foregoing deposition named, was present and by me sworn as a witness in the above-entitled action at the time and place therein specified;

That said deposition was taken before me at said time and place, and was taken down in shorthand by me, a Certified Shorthand Reporter of the State of California, and was thereafter transcribed into typewriting, and that the foregoing transcript constitutes a full, true and correct report of said deposition and of the proceedings that took place;

IN WITNESS WHEREOF, I have hereunder subscribed my hand this 24th day of September 2008.

Early Langley

EARLY LANGLEY, CSR NO. 3537
State of California